



Wyoming Game and Fish Department

Cody Region Angler Newsletter

Volume 15

2021

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Fish Management in the Cody Region

Welcome to the 2021 Cody Region Angler Newsletter! Our work strives to sustain and enhance the amazing aquatic resources in the Bighorn Basin. We are committed to doing our very best to safeguard your resources and offer world-class angling.

We hope you enjoy these highlights and we look forward to seeing you on the water in 2021!

As always, please feel free to contact us with any comments or questions about the aquatic resources in northern Wyoming. Your input is important to us as we manage these resources for you, the people of Wyoming. You'll find all of our contact info on the last page of this newsletter.



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Trout numbers in the lower Shoshone River at all time high.

Once every three years the trout population in the lower Shoshone River from the USGS gage downstream to the Belfry bridge is monitored. During these surveys biologists use rafts electrofish this reach that is just short of two miles. This sampling is done to monitor the fish population and identify ways to improve it.

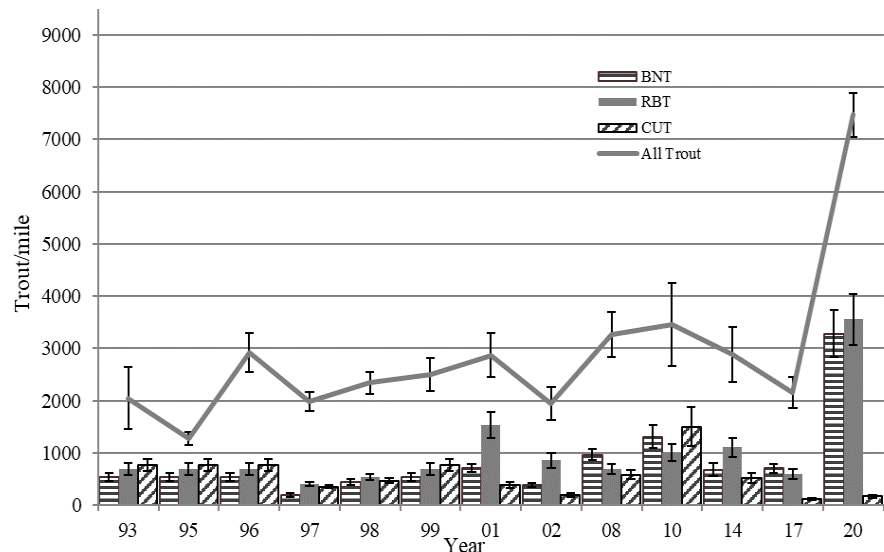
During sampling in fall 2020, we found that there was a record number of fish in this stretch of the Shoshone River. We estimated 7,508 trout per mile, of which 4,402 were Brown Trout, 2,964 were Rainbow Trout, and 104 were Cutthroat Trout. This dramatic and significant increase in the trout population was due to a few factors all of which are tied to the higher than average flows in the Shoshone River. Past Sampling has indicated that there is limited Rainbow Trout natural reproduction on the Shoshone River and instead Rainbow Trout are “recruited” from the upstream Buffalo Bill Reservoir during the high releases. These releases have been prevalent in recent years and has led to a large number of Rainbow Trout in the river. Brown Trout, on the other hand, do naturally reproduce in this section of the Shoshone and the high flows out of Buffalo Bill Reservoir have improved the conditions for Brown

Trout natural reproduction by removing fine sediments from the gravel. This coupled with the winter releases of 350 cfs from Buffalo Bill in the winter of 2019-2020 led to an outstanding cohort of age-1 Brown Trout in our estimate. In fact of the 7,508 trout per mile, 3,542 were Brown Trout that were six to 12 inches long and represented age-1 fish.

The 200 cfs releases from Buffalo Bill dam this past winter are likely to negatively affect the trout population, but there should be plenty of fish that make it through to provide for some great fishing opportunities in 2021.



From left to right: Joe Skorupski, Seth Anderson, and Jason Burckhardt with rainbows from the “Hospital Hole.”



Estimated number of trout per mile in the Shoshone River greater than 6 inches, gage to Belfry Bridge station (with 95% confidence intervals) during fall sampling 1993-2020.

Into the weeds at Renner Reservoir.

Whether you visited Renner Reservoir for the first or tenth time last summer, you probably noticed a branchy, aquatic algae called chara covering the bottom of the reservoir. Last August, we explored an option to address this problem by treating two small portions of the reservoir with an algaecide. The goal of the treatment is to learn what tools might effectively control this overabundant macroalgae.

Compared to other aquatic plants, which are referred to as macrophytes, chara forms denser mats offering less habitat for fish and a less palatable meal for invertebrates. At high enough densities, chara can have negative ecological impacts on aquatic environments and be a nuisance to boaters and anglers. It's fair to say that the density of chara in Renner is high.

Aquatic vegetation in a body of water is important because it provides habitat and food for macroinvertebrates, which in turn provide food for fish. Macrophytes also stabilize sediment and provide cover for fish. Chara, however, is far less beneficial to aquatic ecosystems compared to coontail, and other species of aquatic vegetation that are present in Renner Reservoir. By treating chara, we hope to give the higher quality vegetation a chance to flourish which would benefit the small reservoir.

To determine effectiveness, we sprayed two test plots at varying doses of algaecide. Seven days later the treated areas were revisited and nearly 100% of the chara was killed in both plots. On Nov. 4, little regrowth was observed, suggesting longer-term effectiveness of the treatment.

Based on the effectiveness of test plot spraying, we will expand the spraying in the spring of 2021 to a much larger area. Spraying early in the growing season will give other high quality plants a chance to better establish and is more cost effective.



Eric Shorma sprays an algaecide on a dense stand of Chara at Renner Reservoir in August, 2020.



Boat ramp at Renner Reservoir still free of Chara in November 2020, three months after treatment.

Managers continue to struggle with the issues of sediment in the lower Shoshone River

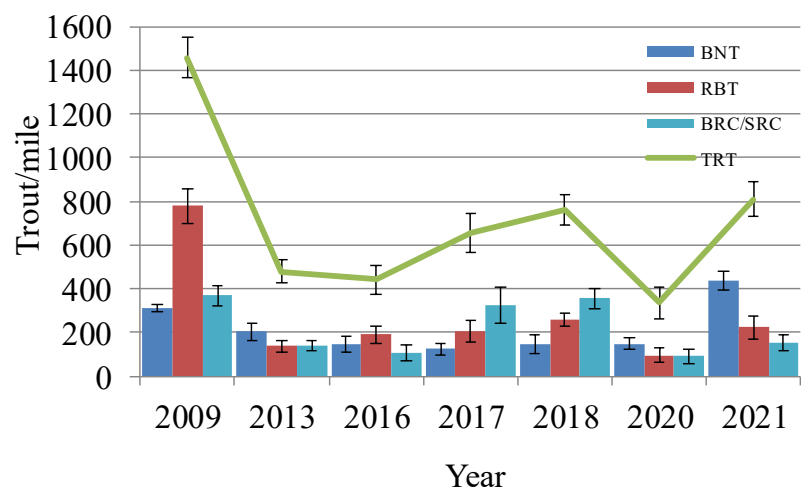
Many of us remember the sediment release from Willwood Dam in the fall of 2016 that killed fish and sparked public outrage. This event formed a series of working groups that have been grappling with what to do about the issue. The WGFD has been working with Wyoming DEQ, the Willwood Irrigation District, the USGS, the Bureau of Reclamation, University of Wyoming, the Wyoming Water Development Office, the State Engineers Office and others to identify solutions to this complex problem. The problem is that when Willwood Dam functions as it was built, it accrues and stores sediment during the April through October irrigation season. The USGS has instruments above and below Willwood Dam to determine the sediment “budget” for the pool behind the dam and have confirmed this. Even with several thousand cubic feet per second of water flowing past the dam, sediment is accruing when the pool behind the dam is full.

We’ve been looking into alternatives to mobilize the sediment that is deposited in the pool behind the dam. In the spring of 2021 we will be conducting a high intensity, short duration sediment release followed by a large increase in discharge. This flushing flow is intended to mobilize the sediment that is released from the dam.

We are continuing to monitor the trout population in this section of the Shoshone River. High turbid water in fall 2019 prevented our sampling during our standard sampling window, so sampling was conducted in the Spring 2020. We repeated the sampling in March 2021 and found a substantial increase in the overall population of trout. We documented the highest abundance of Brown Trout ever recorded on this section of the Shoshone River and significant increases in Rainbow Trout and Cutthroat Trout populations as well. We’re continuing to work with all the individuals involved in this with the Willwood Working Groups to meet the needs of irrigators and provide the best fishery possible.



The Shoshone River below Willwood Dam now has a good number of Brown Trout including a few nice ones like these we sampled in March 2021.



The abundance of trout estimated in the Shoshone River 2009 through 2021 with 95% confidence intervals

Big-Bighorn River rainbows

The Bighorn River is a premier fishery known for large trout. However, a dramatic decline in the trout population was observed in 2017 when extreme high water conditions reduced winter survival and natural recruitment of fish from 2015-2017. Continued monitoring, along with marking stocked fish (2018 and 2019), helped us understand the population's response following this decline.

Although a 60% population decline occurred, just a few years later the population is more robust. After 2017, survival of wild and stocked fish improved and growth rates were off the charts, demonstrating a rebound in the population. By marking two years of all stocked fish, we were able to track those cohorts and now know fish are capable of reaching trophy size classes within a short period of time.

The 2017 decline restructured the population to be younger with higher growth rates. Fast growth rates coupled with high recruitment has resulted in high numbers of exceptionally large fish—the best of both worlds. Fish exceeding 18 inches are averaging 3.5 lbs and hitting those values in less than two years in the river. Compared to historical highs in the early 2000's fish greater than 18 inches were 2.5 lbs. These are the glory days for large fish in the Bighorn River and anglers should experience exceptional fishing for years to come.



Joe Skorupski with a 6.5 pound rainbow, stocked in 2018 and captured in 2020; two years of growth. Rainbows are approximately 1 ounce when stocked.

Steel jack fence— Protecting riparian habitat

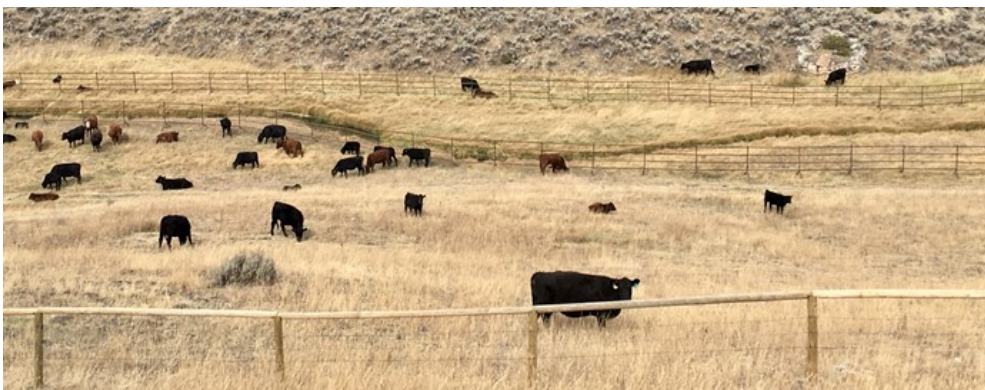
The South Paintrock drainage is inhabited by the largest Yellowstone cutthroat trout population in the Bighorn Mountains. Improving habitat conditions for Yellowstone Cutthroat trout allows for a healthier and more secure population. Complex and robust riparian habitat provides overhead cover, thermal buffering, deep pools and better spawning habitat. All which benefit a trout population, allowing them to persist and thrive in varying water conditions. Habitat in Soldier Creek has been impacted by grazing from wildlife and cattle, and in many areas woody vegetation is lacking along the stream channel. With funding from Wyoming Wildlife Natural Resource Trust, partners from Wyoming Game and Fish Department, Trout Unlimited and the U.S. Forest Service installed 3,000 feet of moveable, steel jack fence along a section of Soldier Creek. R&M Welding was contracted to build, deliver and help install the fence. The goal of this project is to prevent excessive elk, moose and cattle use of riparian stream habitat to allow for willow regeneration and growth. Riparian habitat in general, and willow growth in particular, will be monitored inside the enclosure. Once habitat improvement goals are met, the fence will be moved systematically upstream. Eventually, nearly one mile of riparian habitat along Soldier Creek will be restored. In the spring of 2021, the group plans to plant approximately 1,000 willows within the enclosure area.



Riparian corridor protected by steel jack fence



Dave Sweet— Trout Unlimited member, loads pipe to be distributed along the creek for assembly.



Cattle using the pasture, but not impacting the riparian corridor, protected by the steel jack fence.

North Fork tagging project—what we learned from year one.

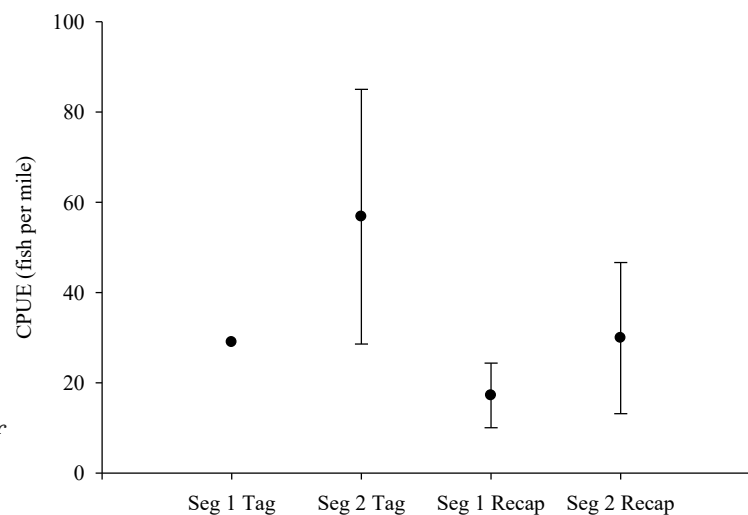
Last spring we launched a project that, if all goes as planned, will provide some much needed clarity on management of the trout fishery in Buffalo Bill Reservoir and the North Fork of the Shoshone River. In last year's newsletter, we discussed the historical monitoring techniques that applied to this population and discussed some the shortcomings of the data we received from it. In this article, we will share a few findings from the first year of the project and our plans for 2021.

Keep in mind the following data can only be viewed as preliminary, information from this project will build substantially over the upcoming years and definitive conclusions cannot be drawn until the end of the project. That said, we are well on track to a successful outcome. Below is a brief update on two of the project's three major objectives.



Objective 1: Determine the proportional distribution of trout as it relates to the April 1-June 30 closure from Newton Creek to Gibbs Bridge.

The figure to the right shows trout catch per mile from the 2020 surveys. Segment 1 is upstream of Newton Creek (open year-round) and segment 2 is from Newton Creek downstream to Gibbs Bridge. As you can see, our catch rate of trout in segment 1 was approximately half the rate found in segment in 2. This indicates that fish density is quite a bit lower in segment 1 both during and after the dates of the closure.



Objective 2: Determine the timing of outmigration to Buffalo Bill Reservoir and differences across years.

Recapture (i.e., recap) passes were conducted from June through August. In both segments our catch per mile dropped by approximately 50% on the recapture passes. Lower catch rates after the spawning period may be explained by fish outmigrating to Buffalo Bill soon after spawning. One fish, tagged in April near Mummy Cave, was captured by an angler fishing the South Fork arm of Buffalo Bill Reservoir in late June. This fish was never available to anglers in the North Fork as it entered and left the river during the time segment 2 was closed to fishing.



Each trout will have two tags; one yellow and one green. Reporting the tag number from one of the tags is all that we need.



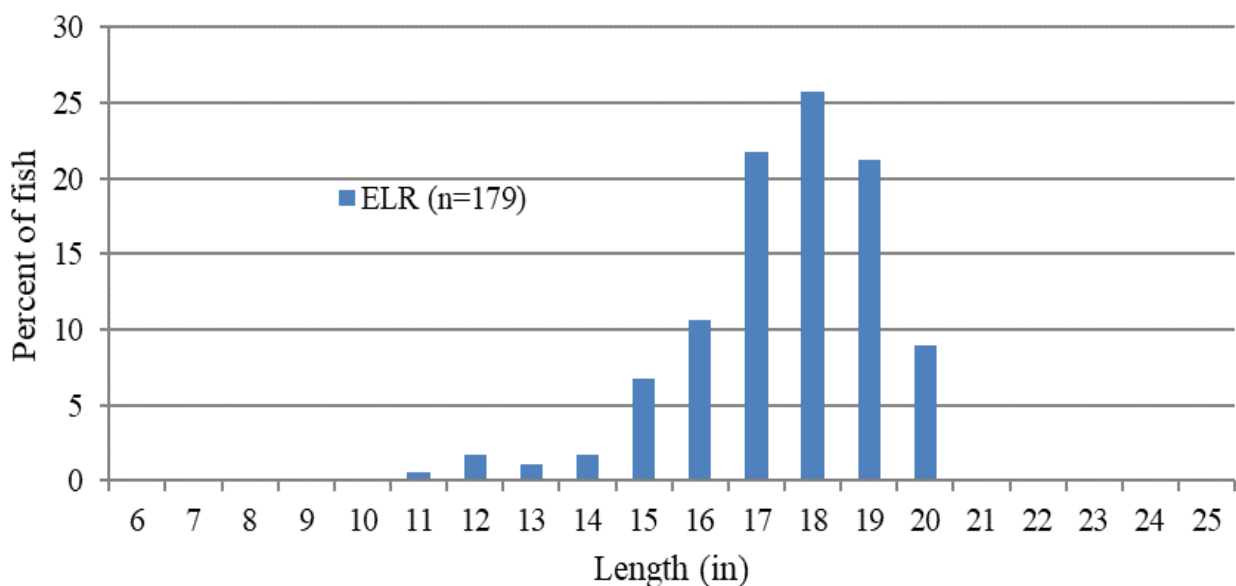
Each year for the next 4 years as many as 2,000 trout will be tagged in the North Fork of the Shoshone River. This photo shows the tag location in a rainbow/cutthroat hybrid trout. Calling Game and Fish to report the capture of a tagged fish is critical to the success of the project. You also will be entered to win a Yeti cooler or a Traeger Grill! Prizes are sponsored by the Adiposse Chapter of Trout Unlimited.

East Newton Lake rainbows

The Newton Lakes, for their size, are among the most popular lakes in the region and for good reason. Their close proximity to town, picturesque setting, and quality trout fishing are a draw for local and visiting recreationists.

Over the last few years there have been major changes at these lakes all associated with extreme high water. We continue to work with a group of committed anglers to address the issues with public access that the high water has created. A new parking lot, decommissioning of old outhouses, and plans for new outhouses were all accomplished last year.

The high water has increased available habitat and productivity of the lakes and we anticipate that the trout populations in each lake will respond with improved growth rates. Our management goal for East Newton Lake is to have an average length of 20 inches in the rainbow population. We have been below this objective for a number of years but saw an improvement from an average length of 17 inches in 2016 to just over 18 inches in 2020. Stocking rates have been kept at 500 rainbows each year despite having more water in the lake. This essentially means that our stocking rate is lower than normal which should lead to increased growth rates. We have our fingers crossed that we see the average length hit 20 inches in the next couple of years.



Length frequency of 179 Eagle Lake rainbow trout (ELR) captured in East Newton Lake, April, 2020..

Update on Sunlight Creek Restoration

Sunlight Wildlife Habitat Management Area (WHMA) consists of 1,414 acres of invaluable wildlife and fisheries habitats along Sunlight, Trail, and Painter creeks. The Sunlight WHMA was purchased in the 1960s by the Wyoming Game and Fish Department (WGFD) to preserve the area for wildlife habitat, public use and access to adjacent U.S. Forest Service lands. Since purchasing the Sunlight WHMA in 1960, the WGFD has lost 7.3 acres of uplands and 1.9 acres of riparian habitats due to unnatural stream channel movements and severe bank erosion. In 2017, one of the stream banks eroded 150 feet laterally, eroding crucial moose and elk winter range and dumping over 31,000 tons or 1,855 dump truck loads of sediment into Sunlight Creek. In 2018, this stream bank moved an additional 100-feet, eroding additional winter range, dumping more sediment in Sunlight Creek, and resulting in the closure of public access roads for approximately 3 weeks.

In 2015, the WGFD began planning a stream restoration project on Sunlight Creek to 1) reduce unnatural bank erosion rates, 2) improve fish habitat, 3) restore riparian and wetland habitats, 4) protect the crucial moose and elk winter range, 5) protect public access, and 6) protect WGFD infrastructure. Natural channel design methodologies were utilized to repair channel degradation and enhance fish habitat across 0.8 mile of stream.

Construction efforts to date have eliminated the unnatural rate of bank erosion that was occurring and added substantial trout habitat. The channel realignment eliminated the observed annual bank erosion of up to 150 feet and prevented 31,540 tons of sediment entering sunlight Creek each year.

Work on this project will continue in 2021 with a lot more willow planting and monitoring of in-channel structures and the Brook Trout population.



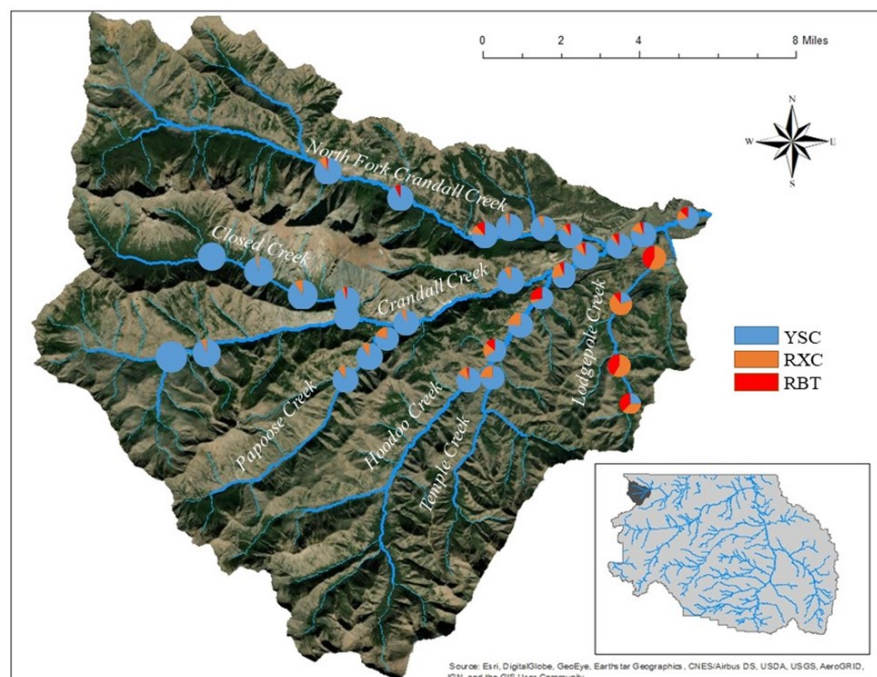
Crandall Creek Yellowstone cutthroat trout

Crandall Creek, combined with its major tributaries (Closed, Hoodoo, Lodgepole, Temple, Timber, and North Fork Crandall Creek), is the largest drainage within the Clarks Fork of the Yellowstone River. This drainage supports the third largest population of Yellowstone cutthroat trout (YSC) in Wyoming outside of Yellowstone National Park. Our goal is to ensure the long-term persistence of this important population as its contribution to the overall status of the species in Wyoming is significant. Unfortunately, the population is currently threatened by hybridization with rainbow trout.



The Cody cutthroat trout collaborative working group placed restoration of Crandall Creek as one of the highest priorities for YSC conservation in the Bighorn Basin. Over the last two summers we have conducted extensive surveys of the Crandall drainage to determine the status of YSC, rainbow (RBT), and rainbow/cutthroat hybrids (RXC). These surveys found that the majority of trout in the drainage are genetically pure YSC. These data also indicate that RBT and RXC are concentrated in Hoodoo, Temple, North Crandall, and Lodgepole creeks and that intervention will be necessary in the coming years to ensure the long-term persistence of the YSC population.

This summer we will begin collecting the data necessary to plan a chemical treatment of Hoodoo and Temple creeks. This includes measuring discharge, velocity, and determining the upper distribution of RBT and RXC in these streams. A detailed plan will be drafted and made available to anyone interested. We will also be coordinating closely with the Shoshone National Forest on all necessary permits in the year ahead.





**Wyoming Game and
Fish Department**
*Conserving Wildlife-Serving
People*

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Important Dates to Remember in 2021

- June 5, 2021— **Kids Fishing Day (Cody) and Wyoming's Free Fishing Day** *The kids fishing event will be held at the Beck Lake Park.*
- March 1—November 30—**Aquatic Invasive Species Boat Inspections** *All watercraft transported into the state from March 1 through November 30 are required to undergo a mandatory inspection by an authorized inspector prior to launching. A list of authorized inspectors can be found on the Game and Fish website on the AIS page.*

We welcome all questions and comments on this newsletter or about the fisheries resources within the Cody Region. Please feel free to give us a call at 307 527-7125 or send an email to:

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